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Eigenvibrations of a beam with elastically attached load

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Abstract

© 2016, Pleiades Publishing, Ltd.The nonlinear eigenvalue problem describing eigenvibrations of a beam with elastically attached load is investigated. The existence of an increasing sequence of positive simple eigenvalues with limit point at infinity is established. To the sequence of eigenvalues, there corresponds a system of normalized eigenfunctions. The problem is approximated by the finite element method with Hermite finite elements of arbitrary order. The convergence and accuracy of approximate eigenvalues and eigenfunctions are investigated.

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Keywords

beam, eigenfunction, Eigenvalue, eigenvalue problem, eigenvibration, finite element method